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Madera County, committed to maintaining high IAQ standards, prioritized installation of reliable airflow measurement systems at its juvenile detention facility.

Executive Summary

This case study delves into Madera County's implementation of the TrueFit Airflow Measurement System (AFMS) at its Juvenile Detention Facility. Facing challenges with outdated airflow measurement devices, the county sought a solution to ensure Indoor Air Quality (IAQ) and occupant safety. Engaging with Lawrence Engineering Group (LEG) and L&H Airco, Madera County deployed the AFMS on six air handling units (AHUs), including both new installations and retrofits. The seamless integration and accurate performance of the AFMS have resulted in significant improvements in IAQ maintenance, energy efficiency, and occupant safety.

About the Customer

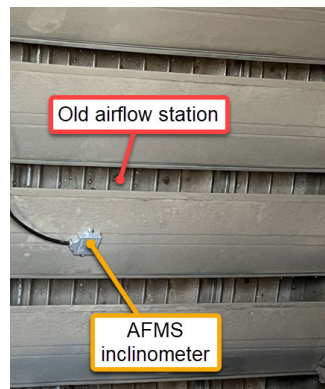
Madera County, committed to maintaining the highest standards of IAQ, prioritized the installation of reliable airflow measurement systems at their juvenile detention facility.

The facility included six AHUs—five aging and one new.

Existing airflow stations were outdated and prone to malfunction, necessitating a modern solution to ensure occupant safety and comfort.

The Challenge

Outdated airflow stations posed challenges related to accuracy, maintenance, and reliability. The stations utilized differential pressure sensors with air strainers intended to reduce turbulence. They were prone to clogging with dirt and debris, compromising their performance, hindering accurate airflow measurements, and requiring frequent maintenance. The airflow stations also required modifications to the AHUs upon installation, leading to disruptions and compromising overall efficiency. Madera County needed an unobtrusive solution that could provide a high level of accuracy while requiring little to no maintenance.



Left: An outdated airflow station (seen through the damper) clogged with dirt. Right: Modifications to the units were required to mount the old airflow stations externally.

Airflow Measurement System Case Study Juvenile Detention Facility | Madera, CA

Engagement and Expertise

Engaging with LEG and L&H Airco, Madera County explored the suitability of the AFMS to meet their requirements. Detailed discussions and assessments were conducted to determine the optimal approach for deploying the AFMS across the facility's AHUs, considering factors such as installation, integration, and long-term reliability.

The AFMS emerged as the preferred solution due to its accurate airflow measurement capabilities, seamless integration with existing systems, and minimal maintenance requirements.

"Since airflow station maintenance often takes a backseat in facilities, it was important to find an accurate solution that required as little maintenance as possible. Also, the AFMS's ability to provide all three flow measurements was a massive game-changer. The existing units are old, so being able to keep an eye on their performance was another big bonus."

—Ryan Carlson, Principal Engineer
Lawrence Engineering Group

"We chose the AFMS because it's easy to install in panels compared to externally on the units. It integrated smoothly with the BAS, and required no fuss during commissioning. The support we got, on-site and over the phone, showed KMC's commitment to us. It made our work easier and gave us great results."

—Kevin Castle, Account Executive
L&H Airco



The versatile AFMS was easily installed in five retrofits (such as above) and one new unit (below).

The Solution

Installation on six AHUs, including five retrofits and one new unit, showcased the versatility and effectiveness of the AFMS in diverse situations.

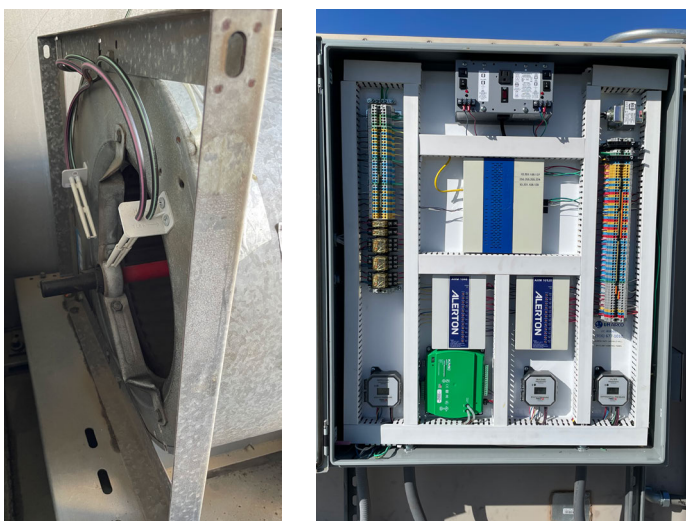
The AFMS inclinometer was strategically mounted on the units' outside air dampers, while airflow measurement probes were installed on supply fans when needed. To maintain the existing BAS, data integration was achieved through MS/TP.

Upon configuration, Characterized Airflow Performance®—the measurement technology utilized by the AFMS—provided accurate readings consistent with ASHRAE Standard 111 criteria.

Conclusion

Madera County's experience with the AFMS showcases the system's effectiveness in addressing airflow measurement challenges. By prioritizing occupant safety and IAQ maintenance, the county implemented a solution that not only meets its immediate needs but also delivers long-term benefits for performance, reliability, and energy efficiency. The seamless deployment and integration of the AFMS, facilitated by knowledgeable partners like LEG and L&H Airco, underscore the value of collaboration and expertise in achieving optimal outcomes.

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Left: Airflow probes were installed on supply fans when needed. Right: The AFMS (green) installed in a panel.